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SEMI-ANNUAL STATUS REPORT TO
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESEARCH IN MOLECULAR PHYSICS (MsG-263-63)

For the Period June 1, 1965 - November 30, 1965

Submitted by

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N 66 81464
(ACCESSION NUMBER)
3
(PAGES)
CR-40060
(NASA CR OR TMX OR AD NUMBER)

None
(THRU)
(CODE)
(CATEGORY)

February 2, 1966

MATERIAL PUBLISHED SINCE LAST REPORT

1. F. Sanders and C. W. Scherr, "Some First-Order Perturbation Energy Values," J. Chem. Phys. 42, 4314 (1965).
2. P. L. Moore, J. C. Browne and F. A. Matsen, "Electronic Structure of CH⁺," J. Chem. Phys. 43, 903 (1965).

MATERIAL IN PRESS

1. C. W. Scherr, F. C. Sanders and N. E. Knight, "Perturbation Theory: Application to 2-, 3-, and 4- electron atoms." Proceedings of the Seminar on Perturbation Theory held at Madison Wisconsin Sept. 1965.
2. J. Hempel, J. C. Browne and F. A. Matsen, "Rydberg States of Three Electron Ions," Molecular Physics, Feb. 1966.
3. F. A. Matsen, A. A. Cantu and R. D. Poshusta, "Spin-Free Quantum Chemistry III," J. Phys. Chem., April 1966.
4. F. A. Matsen, "Spin-Free Quantum Chemistry IV: The pⁿ Electron Configuration," J. Phys. Chem., April 1966.
5. D. R. Scott, E. M. Greenawalt, J. C. Browne and F. A. Matsen, "Quantum Mechanical Potential Energy Curve for the lowest $^1\Sigma_u^+$ State of He₂," J. Chem. Phys., May 1966.
6. F. A. Matsen and D. R. Scott, "On the Existence of a Maximum in the Interaction Between He(1s2s; 3S) and He(1s²; 1S)^{*}," Slater Testimonial Volume, 1966.
7. R. D. Poshusta and F. A. Matsen, "Spin-Free Density Matrices," J. Math. Phys., April 1966.

8. A. G. Pearson, R. D. Poshusta and J. C. Browne, " H_3^+ ,"
J. Chem. Phys., Feb. 1966.

MATERIAL IN PREPARATION

1. R. E. Knight and C. W. Scherr, "Evaluation of the Integrals Required for a Study of Multi-Electron Atomic Systems."
2. O. R. Plummer and F. A. Matsen, "Model Ligand Fields."
3. E. Rodriguez, J. C. Browne and F. A. Matsen, "The He-He Interaction."

WORK IN PROGRESS

1. The work on the excited states of two-electron atomic systems is being continued.
2. The following states of the He_2 system are under study:
 1. $He(1s^2; ^1S) + He(1s^2; ^1S)$ $^1\Sigma_g^+$ ground state
 2. $He(1s^2; ^1S) + He(1s2s; ^3S)$ $^3\Sigma_g^+$
 3. $He(1s^2; ^1S) + He(1s2p; ^1P)$ $^1\Pi_g$
 4. $He(1s^2; ^1S) + He(1s2p; ^3P)$ $^3\Pi_g$
 5. $He(1s^2; ^1S) + He(1s2s; ^1S)$ $^1\Sigma_g^+$
 6. $He(1s^2; ^1S) + He(1s2p; ^3P)$ $^3\Sigma_g^+$